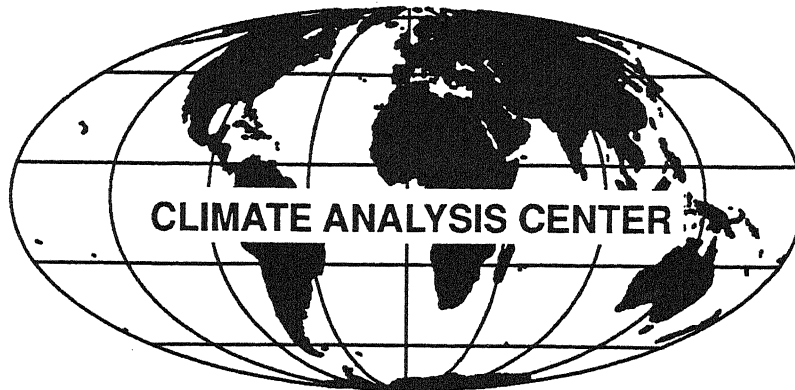


CONTAINS:

**DECEMBER
1993
GLOBAL
CLIMATE
ANOMALIES**

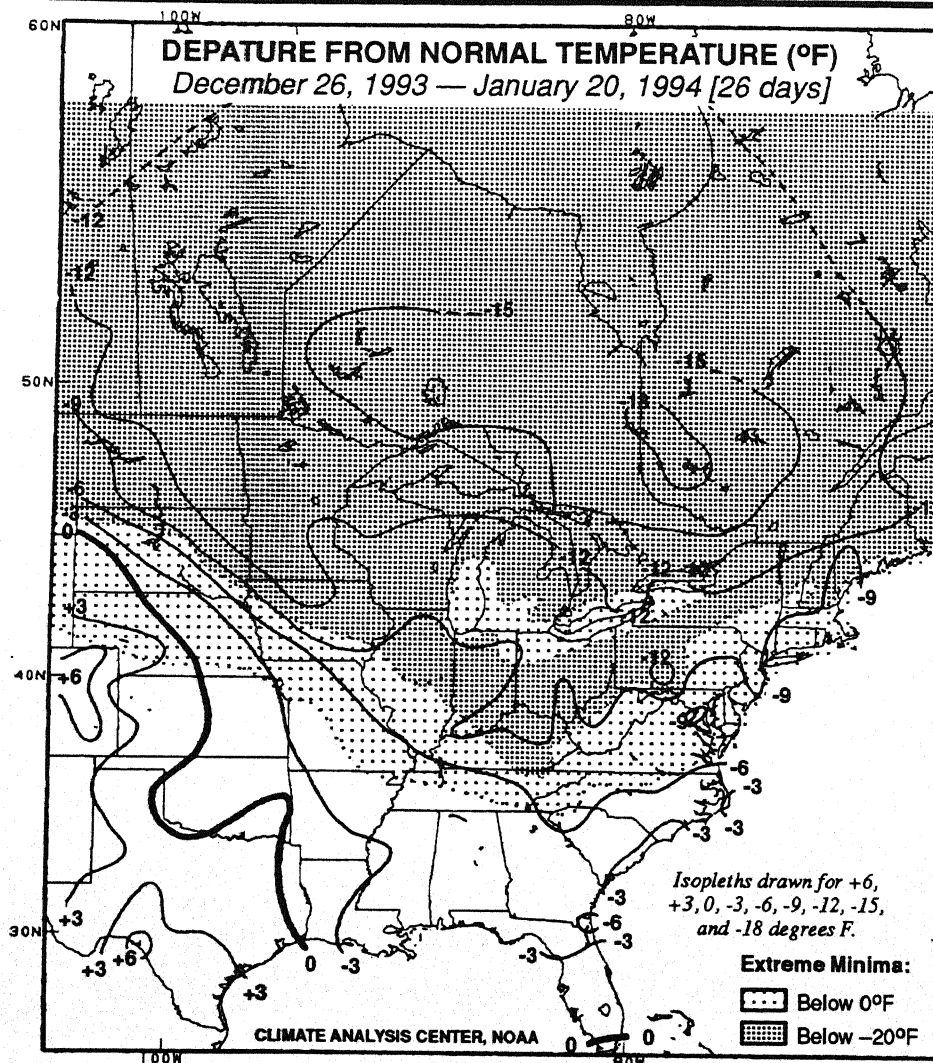


WEEKLY CLIMATE BULLETIN

No. 94/03

Washington, DC

January 19, 1994



BITTERLY COLD AIR COVERS MUCH OF EASTERN NORTH AMERICA. Temperatures have averaged consistently below normal across North America east of the Rockies since the day after Christmas, with departures reaching -14°F along the northern tier of the United States and -19°F in southwestern Quebec. The last ten days brought two outbreaks of brutally cold Arctic air into central and eastern North America, establishing several new all-time record lows in the eastern Ohio Valley, central Appalachians, and western Pennsylvania and sending subzero readings southward into western South Carolina and eastern Tennessee. In addition, gusty winds, up to two feet of snow, and/or sleet and freezing rain accompanied the Arctic outbreak in parts of the upper Midwest, Great Lakes, Ohio, and Tennessee Valleys, central and northern Appalachians, mid-Atlantic, and Northeast, producing a variety of severe impacts. Deep snow cover and frigid air forced Kentucky to close its numbered State, Federal, and Interstates Highways to all but emergency vehicles. Through the mid-Atlantic and lower New England, a high demand for electrical and natural gas heating forced power companies to impose voltage reductions (brownouts) and controlled localized outages (rolling blackouts) for a day or two. In an attempt at conservation, the Federal Government closed its Washington, DC offices on Jan. 20 and reduced hours on Jan. 19 and 21. In addition, a state of emergency was declared in Pennsylvania, New Jersey, and Washington, DC as the Mayor of the Nation's Capital forced all non-essential businesses to close for the day Jan. 20. On Jan. 19, all-time record lows were established at (among other locations) Cleveland, OH (-20°F), Clarksburg, WV (-25°F), and Erie, PA (-18°F) while all-time record low MAXIMUM temperatures were reported at Detroit, MI (-5°F) and Washington National Airport, DC (+8°F). Strong winds made the Arctic blast feel even colder, with wind chills dropping to below zero as far south as northern Florida, -26°F in Atlanta, GA, -45°F near Washington, DC, -71°F in the Chicago, IL area, -83°F in North Dakota, and as low as -88°F in southeastern Saskatchewan. In the United States, over ten dozen deaths have been attributed to the cold and wintry conditions, according to press reports.



**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL WEATHER SERVICE—NATIONAL METEOROLOGICAL CENTER
CLIMATE ANALYSIS CENTER**



WEEKLY CLIMATE BULLETIN

This Bulletin is issued weekly by the Climate Analysis Center and is designed to indicate, in a brief concise format, current surface climatic conditions in the United States and around the world. The Bulletin contains:

- Highlights of major climatic events and anomalies.
- U.S. climatic conditions for the previous week.
- U.S. apparent temperatures (summer) or wind chill (winter).
- Global two-week temperature anomalies.
- Global four-week precipitation anomalies.
- Global monthly temperature and precipitation anomalies.
- Global three-month precipitation anomalies (once a month).
- Global three-month temperature anomalies (once a month).
- Global twelve-month precipitation anomalies (every three months).
- Global twelve-month temperature anomalies (every three months).
- Special climate summaries, explanations, etc. (as appropriate).

Most analyses contained in this Bulletin are based on preliminary, unchecked data received at the Climate Analysis Center via the Global Telecommunications System. Similar analyses based on final, checked data are likely to differ to some extent from those presented here.

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GLOBAL CLIMATE HIGHLIGHTS

MAJOR CLIMATIC EVENTS AND ANOMALIES AS OF JANUARY 15, 1994

1. East-Central North America:

FRIGID CONDITIONS PERSIST.

Temperatures averaged as much as 11°C below normal in Canada and 8°C below normal in the United States. A severe late-week Arctic blast sent lows plummeting to -45°C in southern Canada and -38°C in northern Minnesota [COLD - 4 weeks].

2. East-Central South America:

DRIER WEATHER PREVAILS.

Although isolated showers dumped up to 70 mm of rain on extreme southern Brazil, amounts were generally below 20 mm across the region [WET - Ending at 13 weeks].

3. Europe:

MORE HEAVY PRECIPITATION.

Torrential rains soaked northern Portugal and northwestern Spain with 70 to 110 mm while amounts across the remainder of the region ranged from 20 to 50 mm. Moisture surpluses in parts of the region date back to early March, with 130% to 170% of normal precipitation reported in southern and northeastern England, western parts of the Benelux Countries, northern Germany, northern Italy, the southern Alps, east-central and west-central parts of France, northwestern Spain, and northern and central Portugal in the last ten months [WET - 7 weeks].

4. Mediterranean Basin:

VERY MILD CONDITIONS DEVELOP.

Temperatures averaged as much as 10°C above normal as unusually mild weather developed [WARM - 6 weeks].

5. Southeastern Asia:

DRIER WEATHER BRINGS RELIEF.

Little or no precipitation fell on the Philippines and much of Indonesia, providing a respite from the recent wetness [WET - Ending at 8 weeks].

6. South-Central Australia:

WET WEATHER EASES AS COOL CONDITIONS DEVELOP.

Less than 20 mm of rain fell last week [WET - Ending at 7 weeks]; however, temperatures averaged 3°C below normal last week as unseasonably cool air overspread the region [COOL - 4 weeks].

7. Eastern Australia:

STILL VERY WARM AND DRY.

Isolated showers yielded as much as 40 mm of rain, but most of the region received less than 20 mm [DRY - 5 weeks]. In addition, temperatures averaged as much as 4°C above normal, aggravating the very dry conditions and increasing the risk of wildfires across the region [WARM - 3 weeks].

8. Southwestern Pacific:

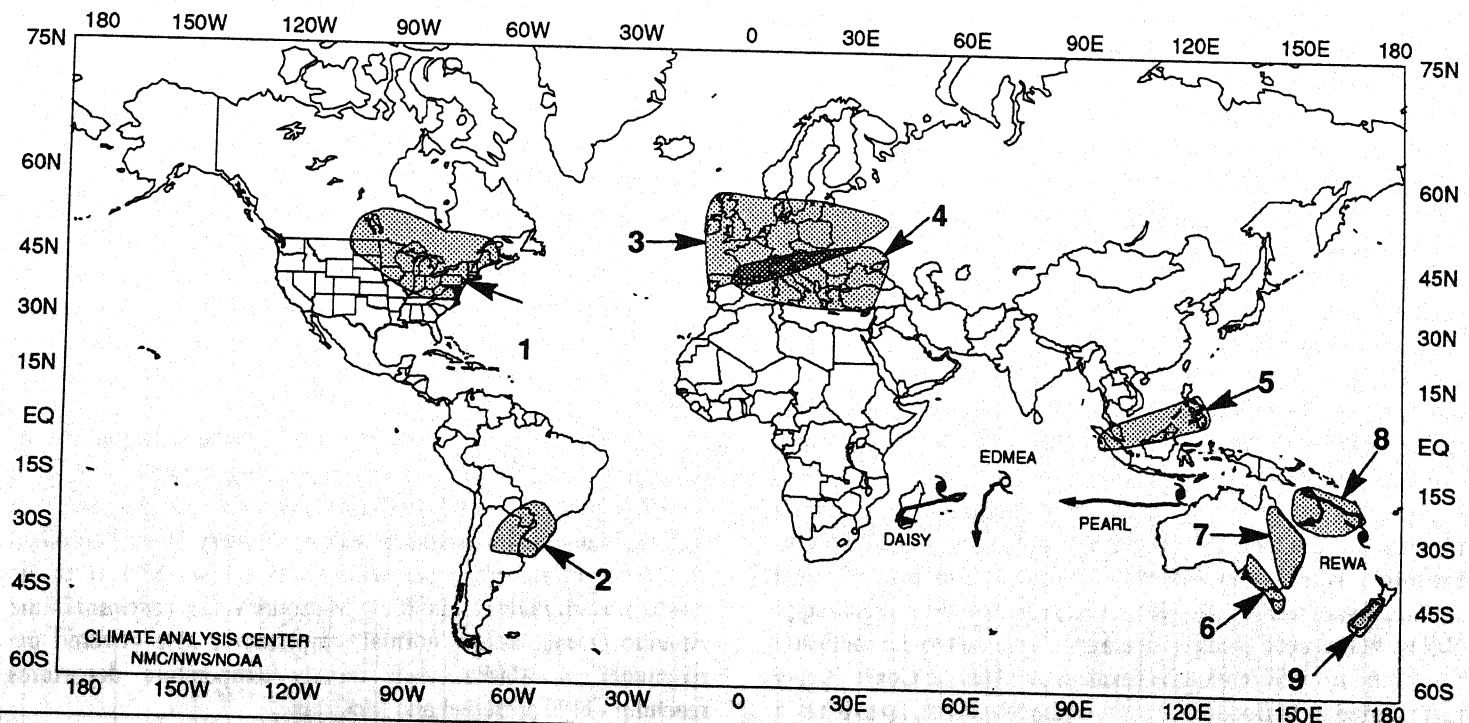
TROPICAL CYCLONE REWA ENDURES.

Former Typhoon Rewa spent its 23rd day meandering across the open waters of the region. Most storms last less than two weeks before moving over land or dissipating. As of January 18th, Tropical Storm Rewa continued to churn, making it the longest-lived tropical cyclone on record in the South Pacific Ocean [Episodic Event].

9. Southern New Zealand:

FLOODING REPORTED.

Heavy rains, characterized by weekly totals exceeding 50 to 100 mm at varying locations, have been observed across New Zealand's South Island since mid-November. As a result, some rivers reached their highest levels since 1870 and water spilled over many dams, according to press reports [Episodic Event].



EXPLANATION

TEXT: Approximate duration of anomalies is in brackets. Precipitation amounts and temperature departures are this week's values.
MAP: Approximate locations of major anomalies and episodic events are shown. See other maps in this Bulletin for current two week temperature anomalies, four week precipitation anomalies, long-term anomalies, and other details.

UNITED STATES WEEKLY CLIMATE HIGHLIGHTS

FOR THE WEEK OF JANUARY 9 – 15, 1994

The coldest air of the season surged southward into the eastern two-thirds of the nation during the latter part of the week, sending lows down to -36°F in northern Minnesota and to 25°F as far south as southern Mississippi and northern Florida. Temperatures averaged as much as 16°F below normal for the week in the northern Plains and upper Great Lakes while high wind combined with the low temperatures to produce dangerous wind chills of less than -60°F in the upper Mississippi Valley. Moist southerly flow ahead of the system brought locally heavy rain from the southeastern Plains eastward to the southern Atlantic Coast, heavy snow to the Appalachians, and a mixture of snow, sleet, rain, and freezing rain to the mid-Atlantic and Northeast. As the week ended, a half-dozen daily record lows were set across the Midwest as the Arctic air plunged through the eastern half of the nation. In sharp contrast, unseasonably mild weather prevailed across the Northwest and the northern and central Rockies, where temperatures reached into the fifties and sixties and averaged as much as 16°F above normal for the week.

At the start of the week, relatively tranquil conditions prevailed over much of the nation, with precipitation limited to snow squalls over the lower Great Lakes and central Minnesota while light precipitation covered the Pacific Northwest. Very cold air and icy conditions remained entrenched over the north-central and northeastern states in the wake of the previous week's storm. According to press reports, six deaths were reported in Pennsylvania, Maine, and Wisconsin as a result of the cold, stormy weather. Late Sunday, a strong cold front pushed southeastward out of Canada into the northern Rockies and northern High Plains. On Monday, strong southerly flow ahead of the front brought light to moderate snow to much of the upper Great Lakes and northern portions of the middle Mississippi Valley while a wintry mix of precipitation fell on the remainder of the middle Mississippi Valley and rain dampened the southeastern Plains. By Tuesday, a broad shield of precipitation developed ahead of the front from the southeastern Plains northeastward and eastward to the middle and southern Atlantic Coast. Locally heavy rains soaked portions of the Gulf Coast States while snow, sleet, and freezing rain covered the southern Appalachians. Meanwhile, a Pacific Ocean storm spread rain inland through the Pacific Northwest, with snow blanketing the higher elevations.

Around mid-week, the aforementioned eastern cold front moved out over the Atlantic Ocean and across the Florida Peninsula as a second and more powerful cold front plunged southeastward across the Great Lakes and middle Mississippi Valley. Widespread precipitation again broke out to the south and east of the front from eastern Texas to the Atlantic Coast. Heavy rains caused local flooding in parts of the Southeast, up to a half a

foot of snow blanketed the southern and central Appalachians, and a mixture of rain, freezing rain, sleet, and snow spread across the mid-Atlantic and Northeast. During the latter part of the week, cold Arctic air spilled into the central and eastern U.S. behind the front as it followed the first frontal system southeastward. Scattered snow fell behind the front from the northern and central Plains to the northern and middle Atlantic Coast. At week's end, the front moved out into the Gulf and Atlantic Ocean as bitterly cold air settled over the eastern two-thirds of the nation. Precipitation was limited to lake-effect snow squalls over the lee of the Great Lakes and scattered light snows across the northern Rockies and northern Plains.

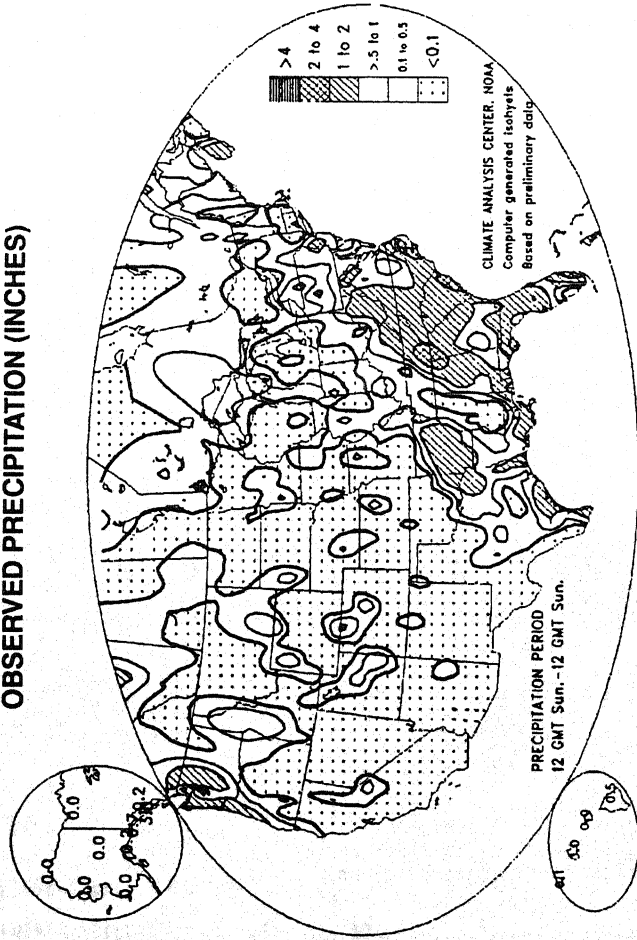
According to the River Forecast Centers, the greatest weekly precipitation totals (between two and four inches) fell across the southern Appalachians and the northern Cascades of Washington. In addition, totals exceeding two inches were scattered across the northern Pacific Seaboard, the lower Mississippi Valley, the Southeast, southern Alaska, and the remainder of the Appalachians. Light to moderate amounts were measured in northern California, the northern and central Rockies, the northern and southeastern Plains, western Hawaii, and the remainders of the Northwest, southern Alaska, and the eastern half of the nation. Little or no precipitation was reported in southern California, the Great Basin, the desert Southwest, the southern Rockies, the central and southwestern Plains, northern and central Alaska, and the remainder of Hawaii.

Relatively warm weather prevailed from the Pacific Northwest and the northern Rockies southward and southeastward to the Mexican border and the Texas Gulf Coast as well as across southern Florida, with weekly departures greater than $+8^{\circ}\text{F}$ observed in the interior Northwest and the northern and central Rockies. Above normal temperatures also covered far northern and northeastern Alaska and the southernmost tier of the state, with weekly departures reaching $+8^{\circ}\text{F}$ at Annette Island. In addition, temperatures averaged near to slightly above normal in Hawaii.

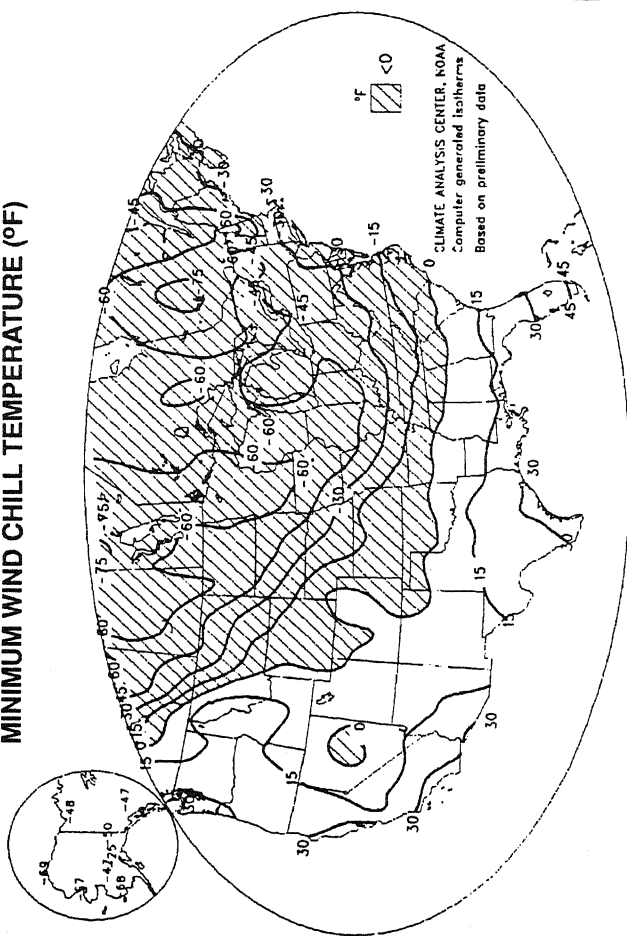
Below normal temperatures dominated the remainder of the nation, with weekly departures ranging between -8°F and -16°F from the northern Plains eastward to the northern Appalachians and mid-Atlantic Coast. Blustery winds combined with the cold air to produce wind chills below -15°F from the northern High Plains and middle Missouri Valley eastward to the Atlantic Ocean. Below normal temperatures also covered the remainder of Alaska, with weekly temperature departures reaching -11°F at Bethel and McGrath.

UNITED STATES WEEKLY CLIMATE CONDITIONS (January 9 – 15, 1994)

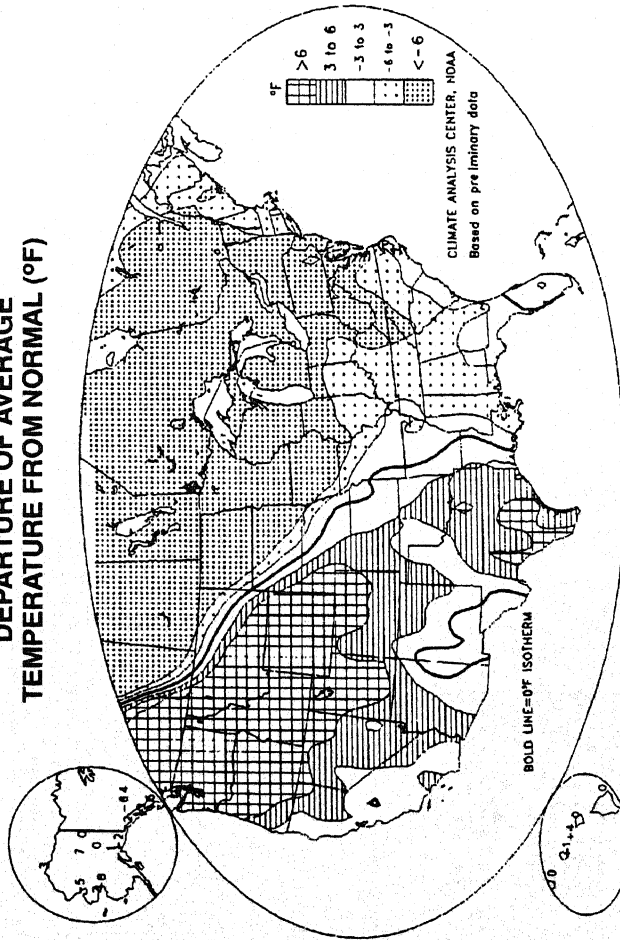
OBSERVED PRECIPITATION (INCHES)



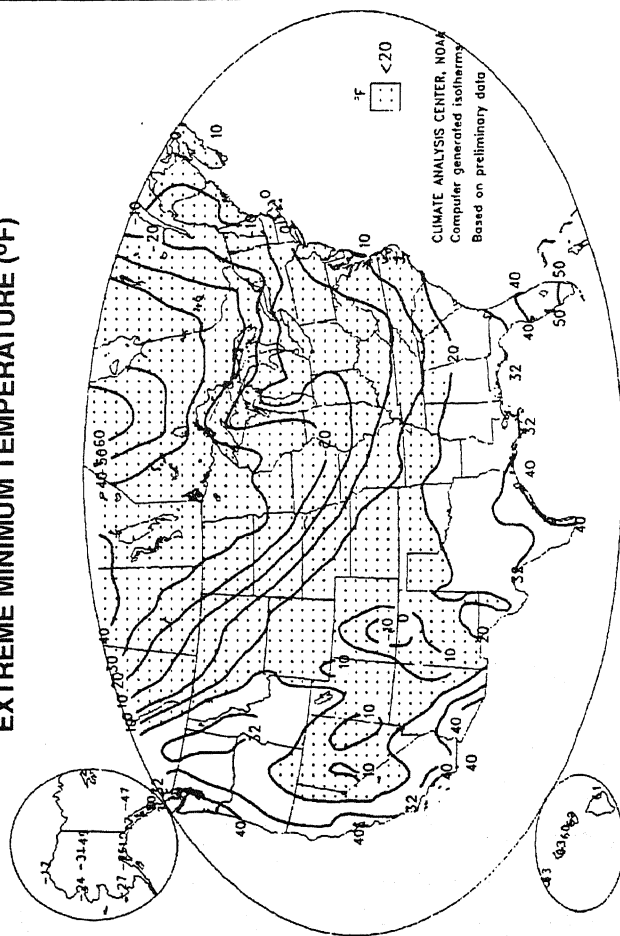
MINIMUM WIND CHILL TEMPERATURE (°F)



DEPARTURE OF AVERAGE TEMPERATURE FROM NORMAL (°F)

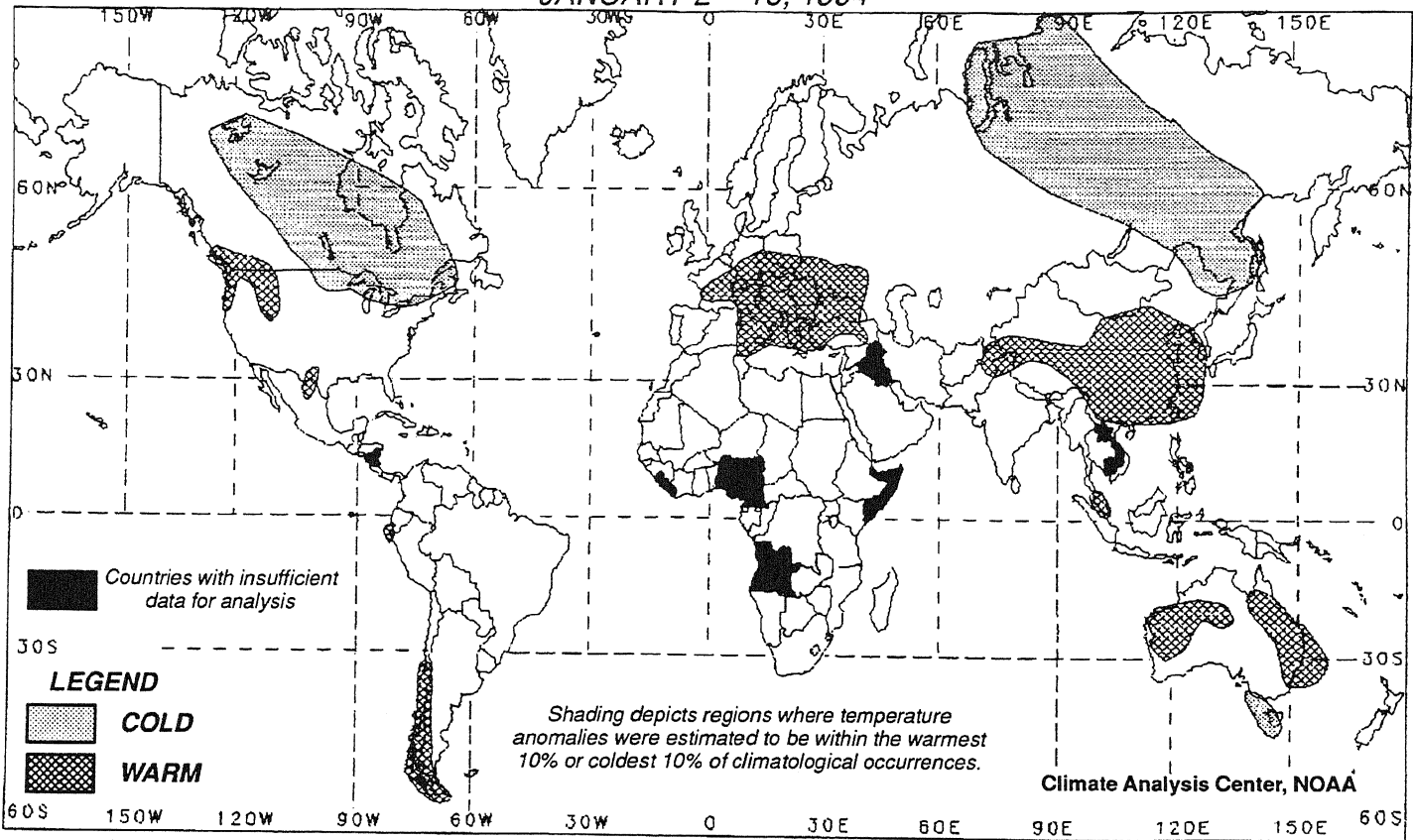


EXTREME MINIMUM TEMPERATURE (°F)



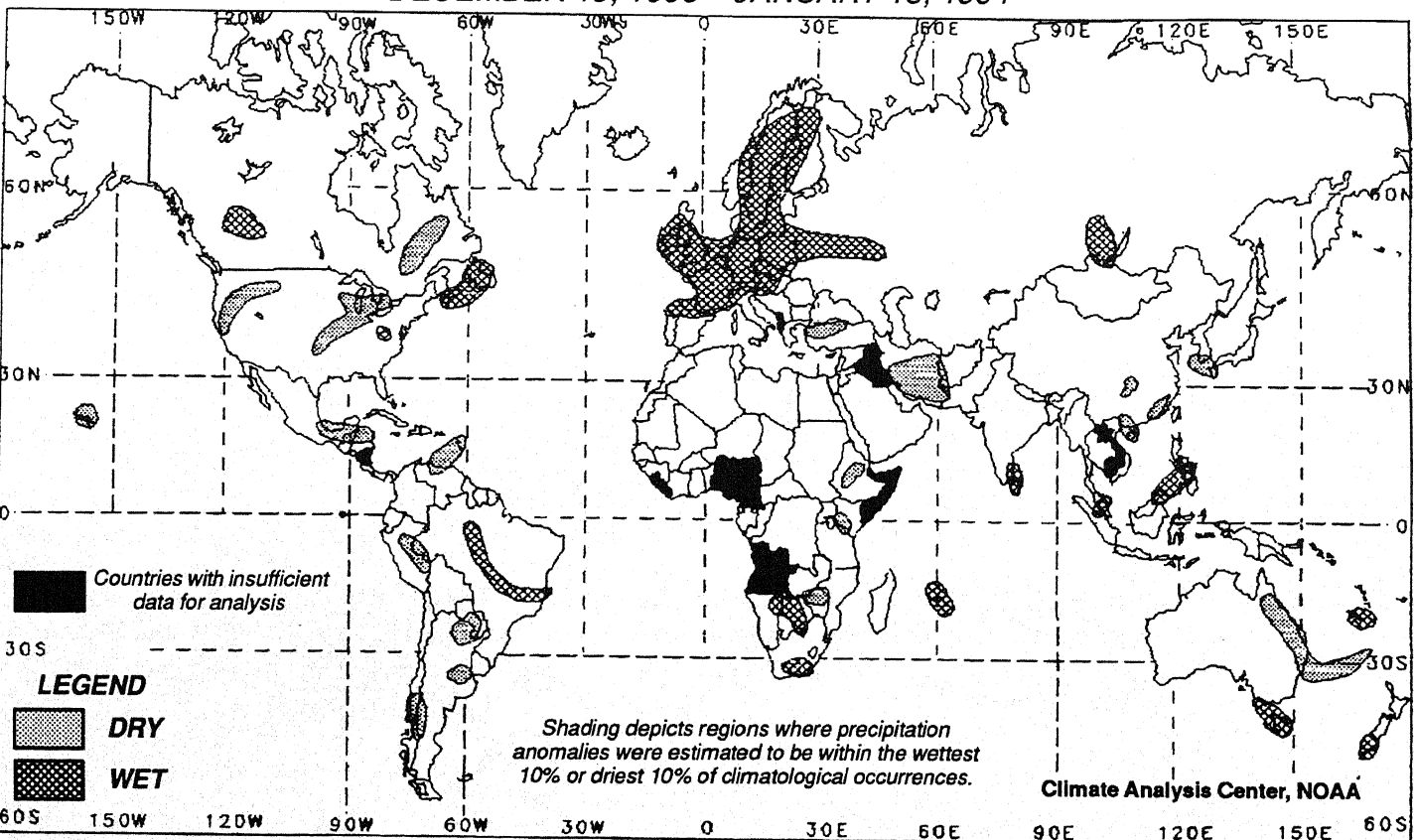
TWO-WEEK GLOBAL TEMPERATURE ANOMALIES

JANUARY 2 – 15, 1994



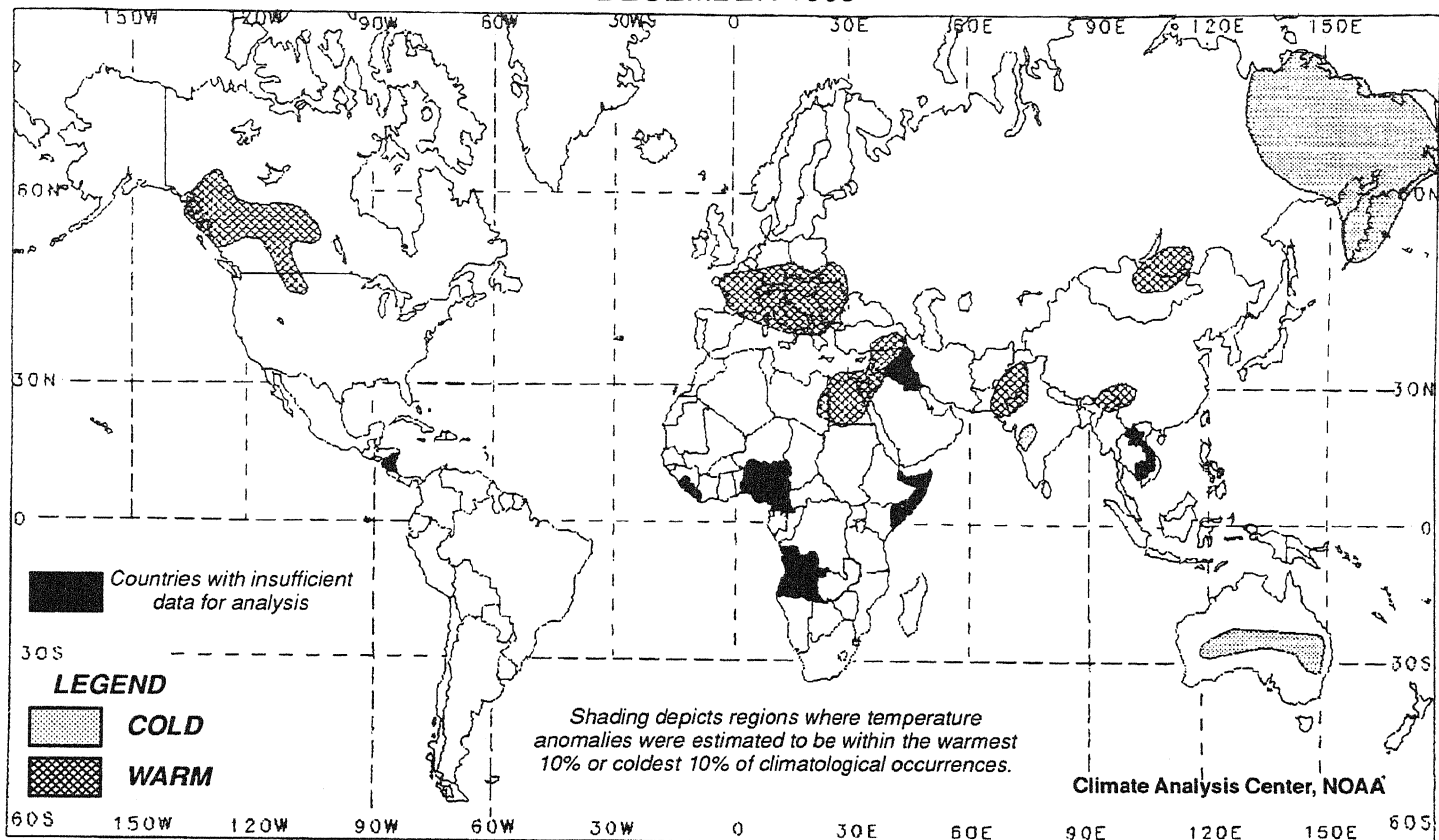
FOUR-WEEK GLOBAL PRECIPITATION ANOMALIES

DECEMBER 19, 1993 – JANUARY 15, 1994



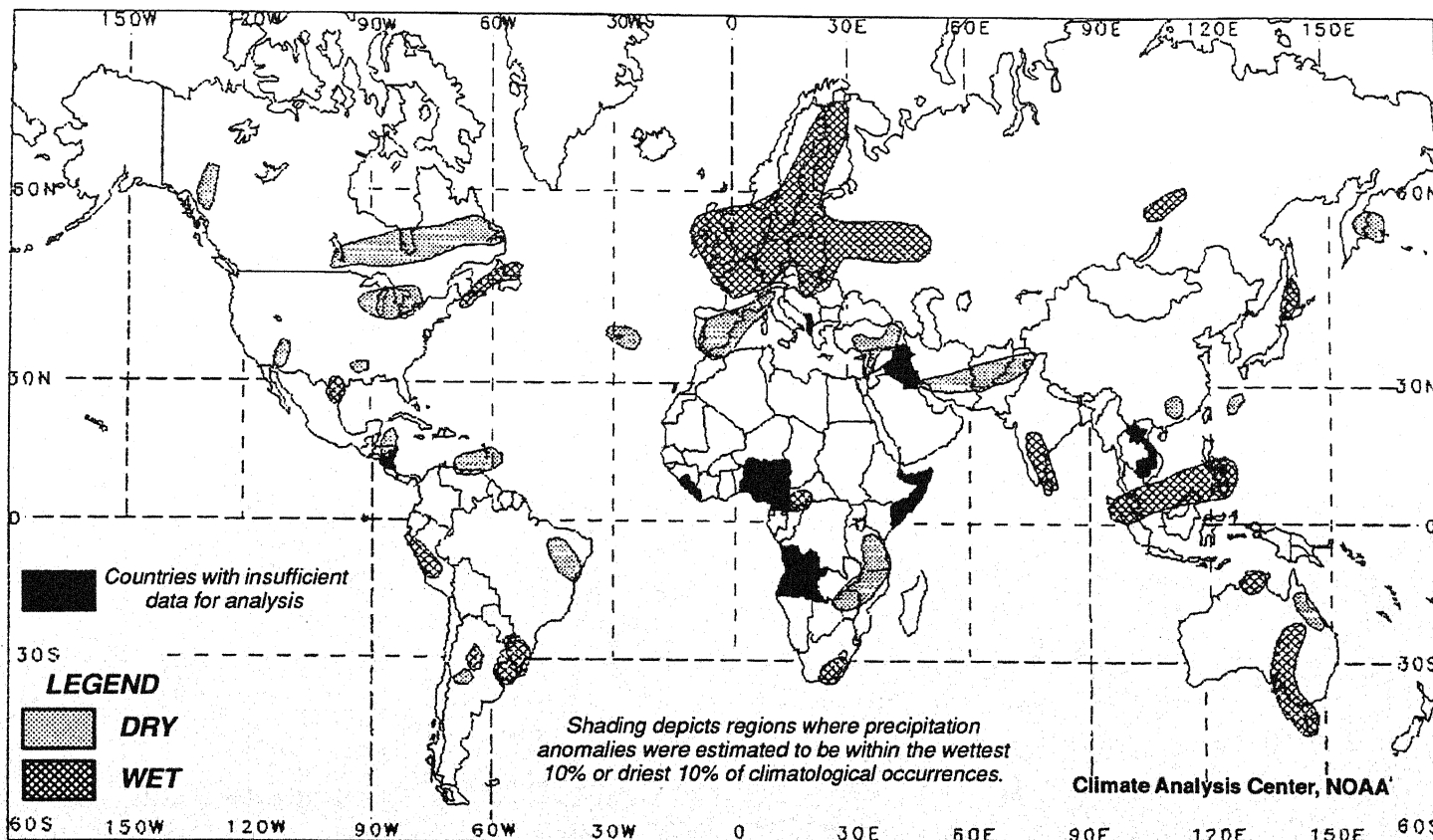
MONTHLY GLOBAL TEMPERATURE ANOMALIES

DECEMBER 1993



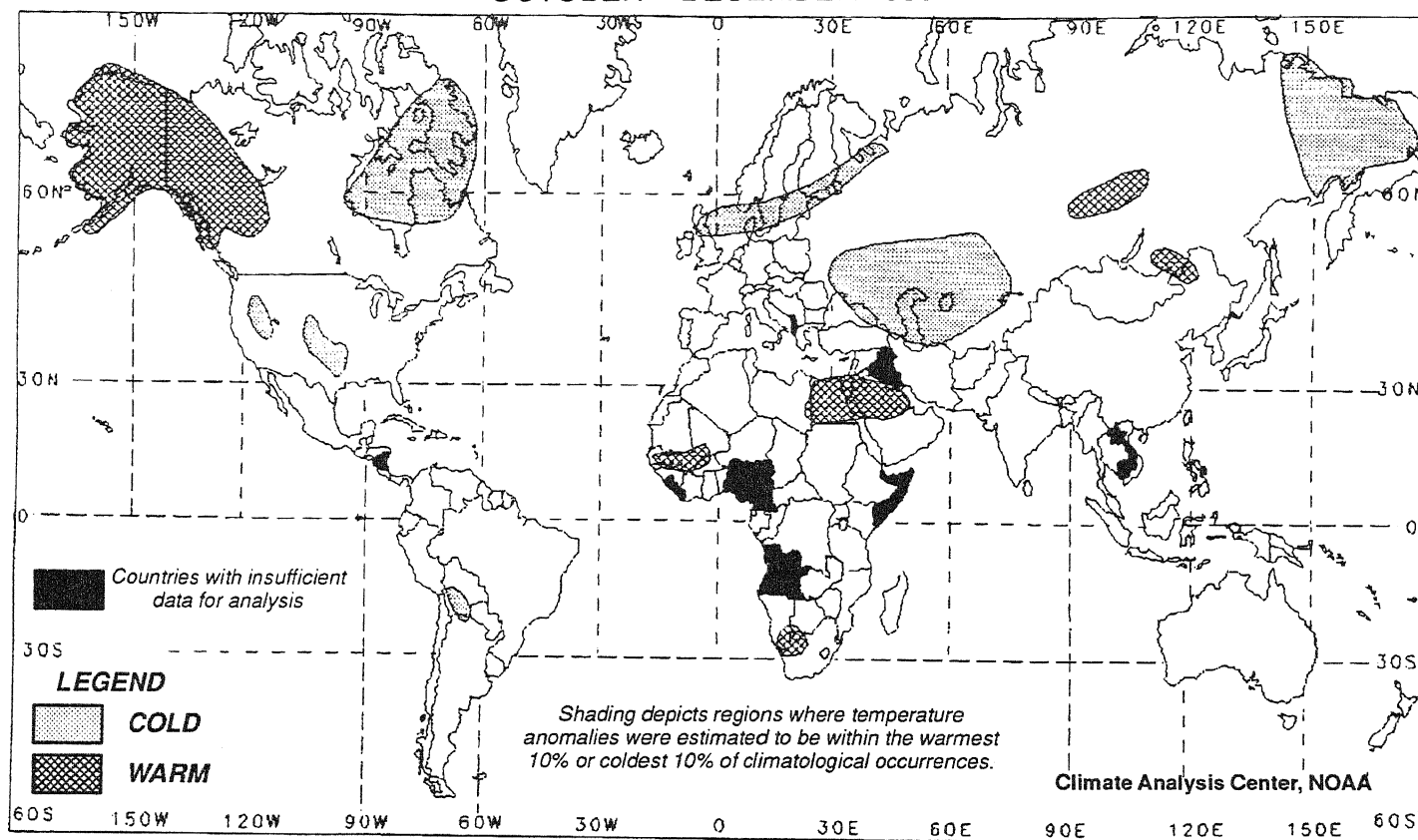
MONTHLY GLOBAL PRECIPITATION ANOMALIES

DECEMBER 1993



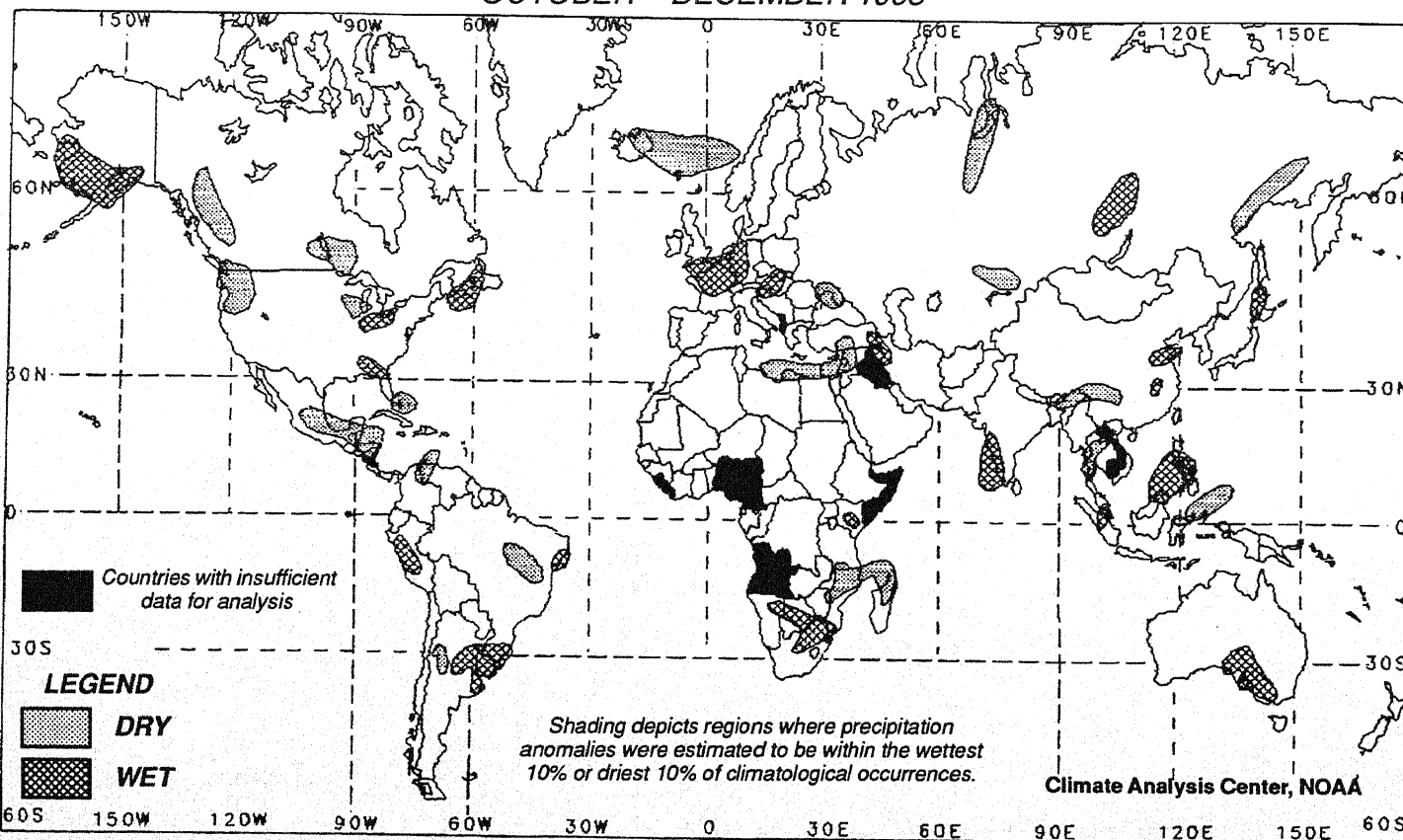
THREE-MONTH GLOBAL TEMPERATURE ANOMALIES

OCTOBER – DECEMBER 1993



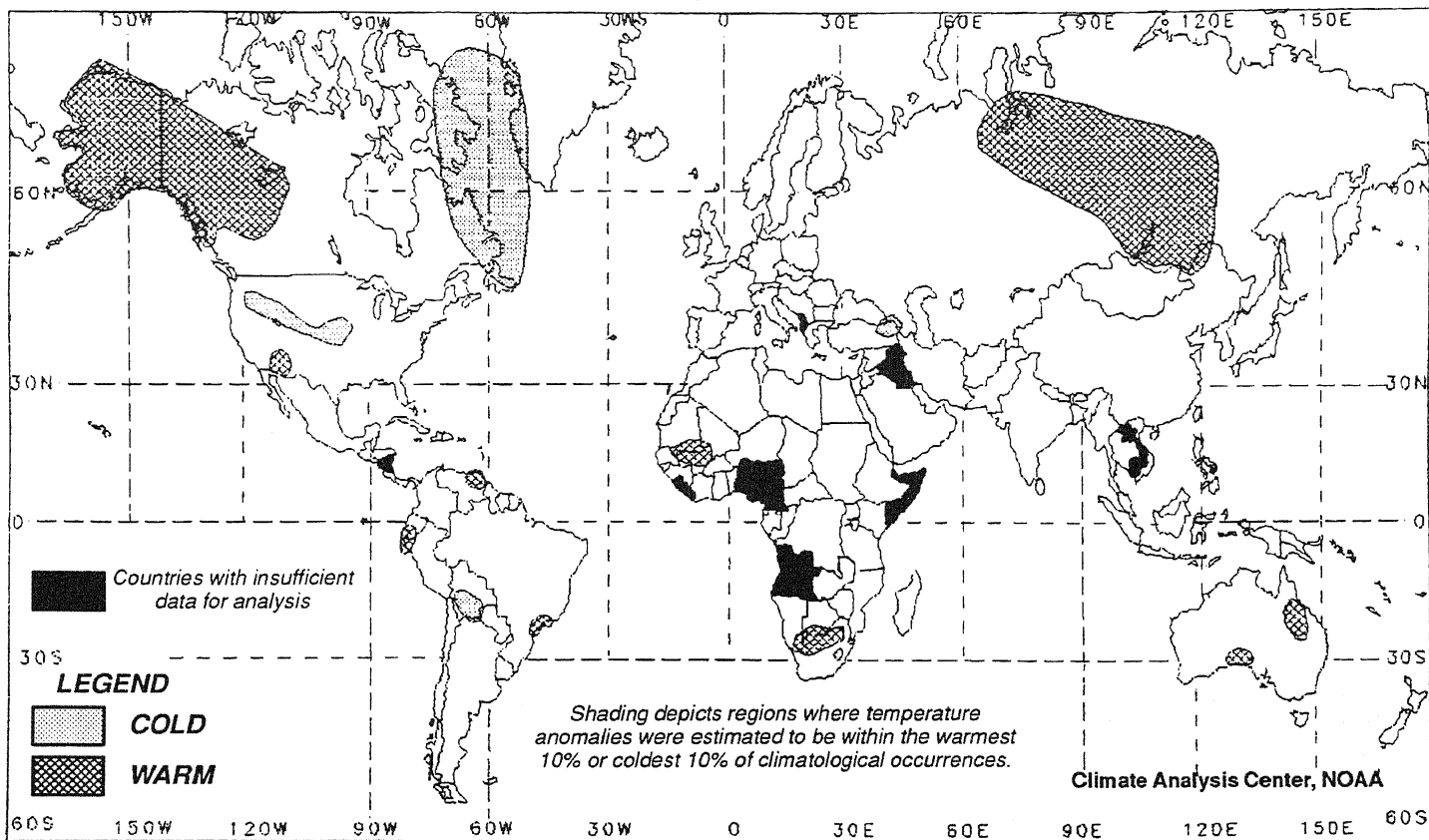
THREE-MONTH GLOBAL PRECIPITATION ANOMALIES

OCTOBER – DECEMBER 1993



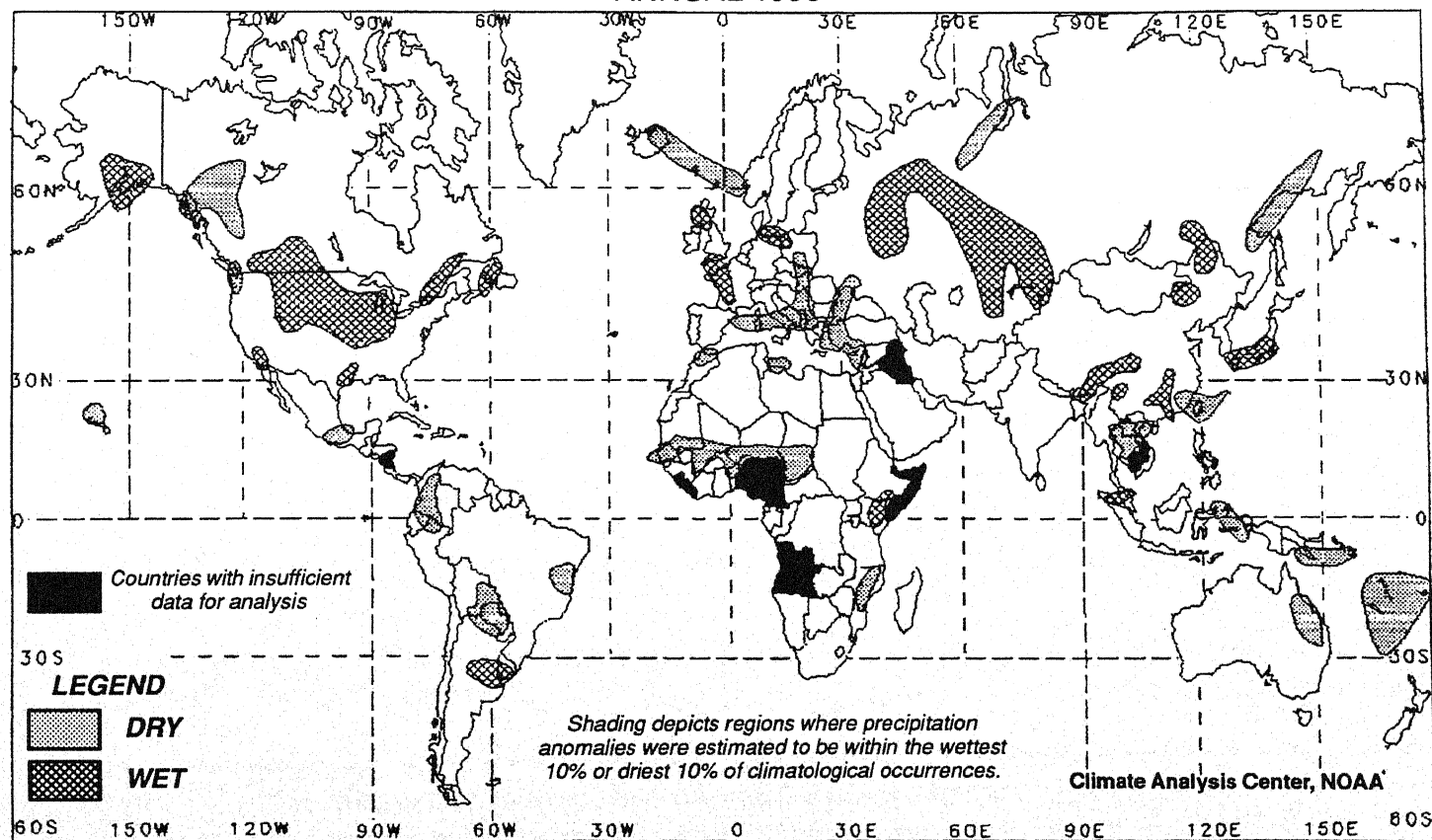
TWELVE-MONTH GLOBAL TEMPERATURE ANOMALIES

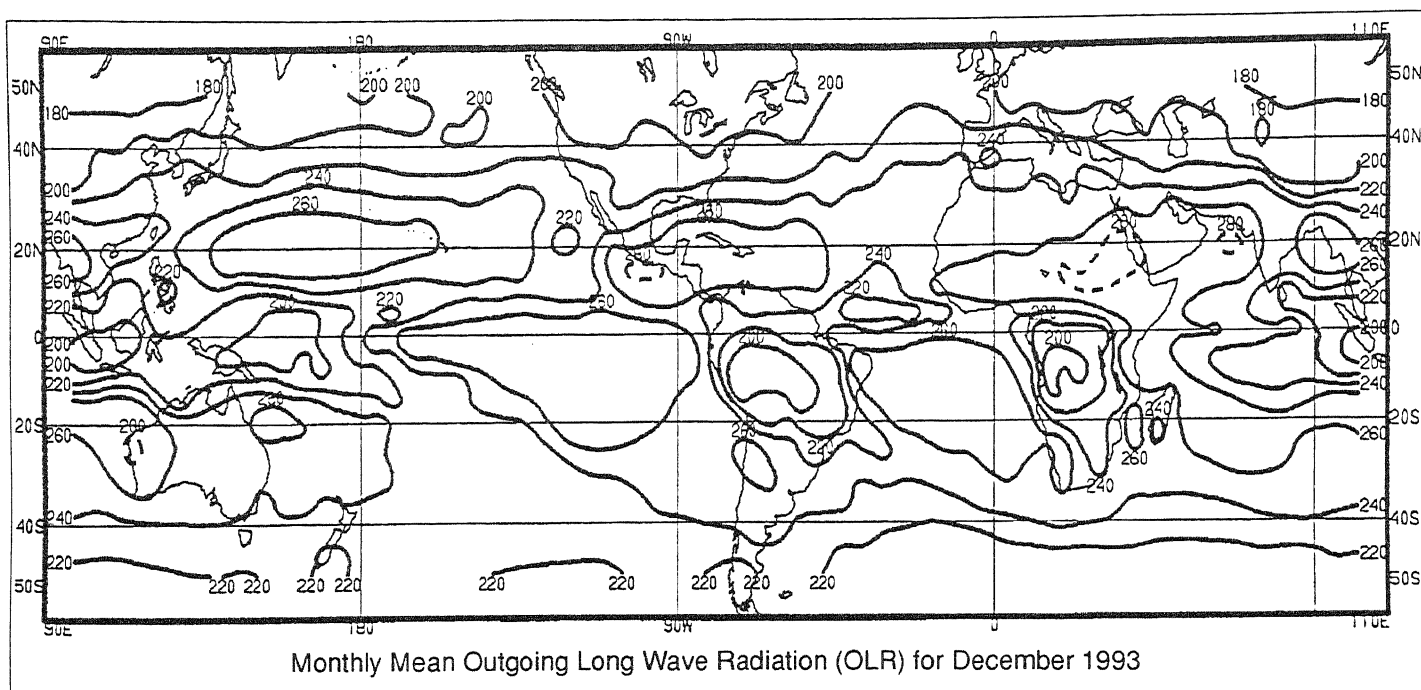
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TWELVE-MONTH GLOBAL PRECIPITATION ANOMALIES

ANNUAL 1993





EXPLANATION

The mean monthly outgoing long wave radiation (OLR) as measured by the NOAA-9 AVHRR IR window channel by NESDIS/SRL (top). Data are accumulated and averaged over 2.5° areas to a 5° Mercator grid for display. Contour intervals are 20 Wm^{-2} , and contours of 280 Wm^{-2} and above are dashed. In tropical areas (for our purposes $20^\circ\text{N} - 20^\circ\text{S}$) that receive primarily convective rainfall, a mean OLR value of less than 200 Wm^{-2} is associated with significant monthly precipitation, whereas a value greater than 260 Wm^{-2} normally indicates little or no precipitation. Care must be used in interpreting this chart at higher latitudes, where much of the precipitation is non-convective, or in some tropical coastal or island locations, where precipitation is primarily orographically induced. The approximate relationship between mean OLR and precipitation amount does not necessarily hold in such locations.

The mean monthly outgoing long wave radiation anomalies (bottom) are computed as departures from the 1979 – 1988 base period mean. Contour intervals are 15 Wm^{-2} , while positive anomalies (greater than normal OLR, suggesting less than normal cloud cover and/or precipitation) are dashed and negative anomalies (less than normal OLR, suggesting greater than normal cloud cover and/or precipitation) are solid.

